TUBERCULOSIS IN THE PHILIPPINE WORKFORCE
Towards a DOTS Service Delivery Model

FINAL REPORT

Submitted to:

THE PHILIPPINE TUBERCULOSIS INITIATIVE FOR THE PRIVATE SECTOR
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By:

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ABBREVIATIONS

APIS	—	Annual Poverty Indicator Survey
BHW	—	Barangay Health Worker
DOTS	—	Directly Observable Treatment Strategy
FGD	—	Focus Group Discussion
KI	—	Key Informant
KII	—	Key Informant Interview
LFS	—	Labor Force Survey
LFS/APIS	—	Labor Force Survey/Annual Poverty Incidence Survey
NTPS	—	National TB Prevalence Survey
NTP	—	National Tuberculosis Program
RHU	—	Rural Health Unit
TB	—	Tuberculosis

CONTENTS

I. INTRODUCTION

1. Although tuberculosis (TB) remains a major public health issue in the Philippines, no accurate data exist on the prevalence of TB[1] by economic sector or distinct workforce groups. While available limited data suggest that TB prevalence may be somewhat lower among workers in the industrial sector as compared to the general workforce, documentation is sparse.

2. The current study begins with a thorough examination of available secondary data sources, including service statistics, surveys, and TB expenditure claims data (see Annex A for details), with the objective of assessing TB prevalence in the workforce. Findings revealed that no such indicator appears to be generated by government or non-government agencies in the country. This suggests that further research to develop accurate estimates of TB prevalence among workforce groups could play an important role in planning for deployment of new DOTS (Directly Observed Treatment Strategy) centers.

3. In response to this identified gap in knowledge, the current study was designed to update available research data on TB in the Philippines. Study objectives were to:

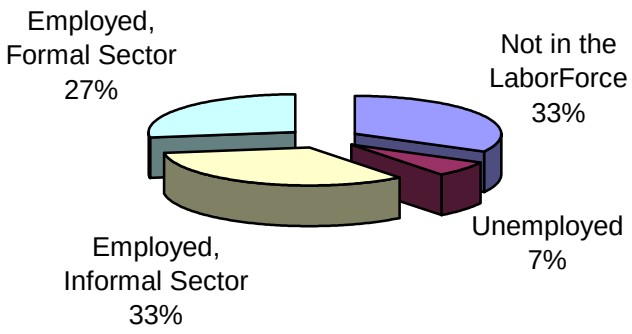
(i) Identify segments of the Philippine workforce significantly affected by TB;
(ii) Provide demographic and socioeconomic profiles of TB cases in the workforce; and
(iii) Describe health-seeking behaviors of the Philippine workforce.

4. These objectives were addressed using a combination of qualitative and quantitative data. The first two objectives were addressed by analyzing data drawn from the matched file of the Labor Force Survey (LFS) and the Annual Poverty Indicator Survey (APIS) (both were conducted in 1998). The third objective was addressed by conducting focus group discussions (FGDs) and key-informant interviews (KIIs).[2]

5. Based on descriptive analysis of the LFS/APIS matched data, the Philippine workforce can be classified into those "in the labor force" and those "not in the labor force." In 1998, two-thirds of adult Filipinos were in the labor force. Figure 1 shows a further breakdown for persons in the labor force. The 93% percent of those who were employed in the labor force can be further classified as working in either the formal or informal sectors. While the formal sector accounts for 45% of the employed labor force, it represents only about 27% of the Philippine workforce.[3]

[1] The prevalence of TB, defined as cases per 1000 population, will be referred to as "TB prevalence" or simply "prevalence" in this report.
[2] See Annex B for the qualitative data collection methodology used in the study.
[3] See Annex C for the classification definitions used.

Figure 1. Philippine Workforce, 1998



Source: 1998 Labor Force Survey (LFS)

II. TB Prevalence in the Workforce

II.A. Overall Prevalence

6. **Quantitative Data.** According to the National TB Prevalence Survey (NTPS), conducted in 1997 by the Tropical Disease Foundation, Inc., 3.1 persons per 1000 population 10 years old and above had bacteriologically confirmed tuberculosis or were smear positives.[4] The 1997 NTPS data were disaggregated by age group, allowing TB prevalence among the working age population to be adjusted for age. Analysis of the data using this age-adjusted procedure led to an estimate of the TB prevalence in the working-age population (ages 15-64 years) as being approximately 3.34 per 1000 population.[5]

7. However, it was not possible to control for important demographic variables using the 1997 NTPS data given that only the gender variable was available for analysis. The researchers identified the matched LFS/APIS data as the only available source appropriate for classifying and analyzing TB cases in the Philippine workforce. The APIS, being a rider to the LFS, is also a nationally representative sample survey.

8. Thus, estimates of TB prevalence were developed using the 1998 LFS/APIS matched data. For individuals in the productive ages (15-64 years), TB prevalence was estimated to be 4.93 per 1000 population during the six months prior to the survey. As expected, this estimate of TB prevalence was higher than the 1997 NTPS laboratory test-based rate and other estimates not disaggregated by age.[6] Thus, some degree of confidence can be attributed to this estimate of 4.93 TB prevalence in the workforce.

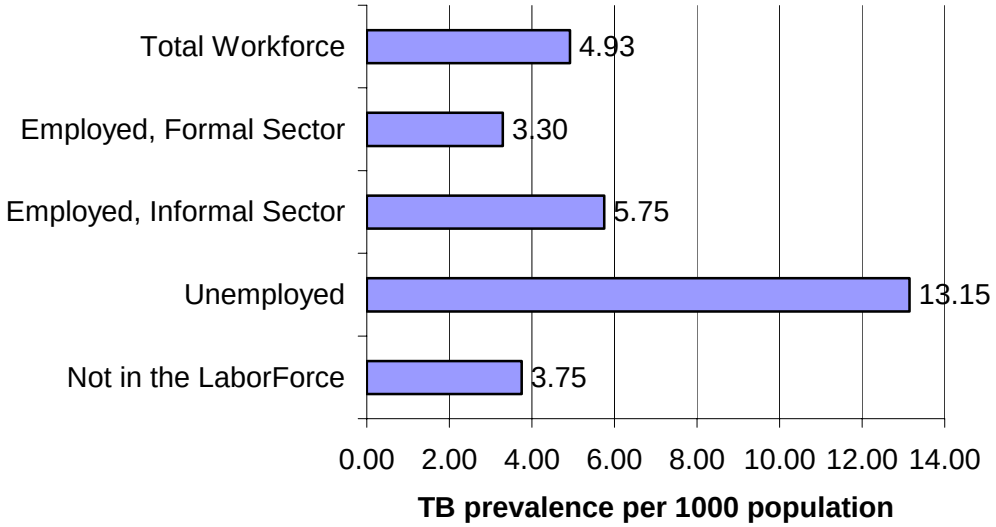
[4] TDFI, 1997: Table 34, p.68
[5] The adjustment factor of 1.0761 was used to arrive at the prevalence rate for the working-age population
[6] See Annex A for a description of other data sources

9. **Qualitative data**. Analysis of qualitative data collected in the present study supports the higher estimated prevalence rate. Responses from participants in 12 FGDs conducted nationwide in July 2003 strongly suggest that TB remains a significant public health problem in the Philippines. Many participants described their perceptions that TB prevalence has been increasing over the last five years, an increased prevalence logically associated with the country's rapid population growth. Few FGD participants felt that TB is no longer a problem because it is now curable.

II.B. Prevalence by Workforce Category

10. **Quantitative Data.** Analysis of self-reported TB prevalence by workforce category shows significant differences. As shown in Figure 2, unemployed persons had the highest TB prevalence (13.15/1000), followed by those working in the informal sector (5.75/1000), those not in the labor force (3.75/1000), and workers in the formal sector (3.30/1000). Unemployed persons were four times more likely to have TB than workers in the formal sector. They were also 3.5 times more likely to have TB than those who are not in the labor force and 2.3 times more likely to have TB than those employed in the informal sector. Among employed persons, workers in the informal sector were 70% more likely to have TB than those working in the formal sector. This may be attributable to more stringent screening of applicants in the formal sector; individuals working in the formal sector who contract TB may no longer work, while individuals with TB working in the informal sector often continue working due to economic necessity or other factors. This same dynamic may explain why unemployed individuals had the highest prevalence.

Figure 2. TB Prevalence by Workforce Categories



Source : 1998 LFS/APIS

11. **Qualitative Data.** The differences in prevalence observed by workforce group in the survey analysis were corroborated by findings identified in the qualitative data. All 25 key informants agreed that the unemployed, those in the informal sector, and the poor are most commonly and severely affected by TB. Commonly mentioned as being at risk were drivers

(bus, taxi, PUJ/tricycle), laborers, farmers, fisherfolk, construction workers, and vendors. Most FGD participants cited blue collar workers (e.g., construction workers/laborers, chemical and garment factory workers, garbage collectors, security guards and policemen) as being at risk due to the perceived stressful nature of their work. Self-employed individuals, including doctors, health workers, beauticians, laundrywomen, welders, and wharf hands were also identified as vulnerable due to irregular working hours and exposure to people with TB. Most FGD participants identified the unemployed as being at risk, particularly given the high proportion of that group who live below the poverty line.

12. Analysis of data from the FGDs and KIIs identified several factors that contribute to increased TB prevalence among poor groups:

- **(i)** Lack of adequate food and nutrition, leading to significantly compromised body resistance.
- **(ii)** Overcrowded living conditions and dilapidated housing structures, creating ideal conditions for easy transmission of the disease.
- **(iii)** Undesirable health behaviors, especially smoking and drinking).
- **(iv)** Limited access to health facilities due to financial constraints and lack of social security or PhilHealth benefits.
- **(v)** Lack of awareness of available public sector services or other resources.
- **(vi)** Lack of knowledge about TB symptoms and inability to identify signs of the disease.
- **(vii)** The tendency for heads of household (often working in the informal sector or self-employed at small entrepreneurial activities) to de-emphasize their own personal health in deference to the immediate basic needs of their families.
- **(viii)** Lowered resistance associated with lack of sleep and anxiety about the household economic situation.
- **(ix)** The inability to purchase TB medicines, leading to lack of compliance with treatment regimens.

The combination of these factors significantly increases poor persons' vulnerability to TB.

II.C. Prevalence by Place of Residence

13. The 1998 LFS/APIS data were analyzed with reference to regional variation and possible differences by urban-rural residence (see Annex D). Analysis of TB prevalence rates (cases per 1000 working age population) by region showed the highest prevalence in Western Visayas (10/1000), Bicol (9/1000), and NCR (6/1000). Provincial breakdowns identified eight provinces with prevalence rates of 10/1000 or higher: Oriental Mindoro (31/1000), Occidental Mindoro (12/1000), Iloilo (12/1000), Sorsogon (12/1000), Antique (11/1000), Masbate (11/1000), Negros Occidental (11/1000), and Romblon (10/1000). All three of the highest-prevalence regions and six of the eight high-prevalence provinces were characterized by high population densities relative to national norms (NSCB, 2001).[7] The three high-prevalence regions also exhibited economic expansion higher than the national average of 4.4% in 2002 (NSCB, 2002). Analysis of TB prevalence in the workforce by urban-rural classification showed only minor variation, with those living in rural areas (5.2/1000) being 13% more likely to have TB than those living in urban areas (4.6/1000).

[7] The two high-prevalence provinces with lower than average population densities were Masbate and Antique

II.D. Prevalence by Socioeconomic Characteristics

14. TB prevalence differed significantly by level of educational attainment (see Table 1 and Annex D). Persons with at most elementary education (7.62/1000) or with post-college education (7.63/1000) were approximately twice as likely to have TB than those with high school education (3.86/1000) and three times as likely to have TB than those with college education (2.50/1000). The susceptibility to TB infection of less educated individuals is not surprising, and is associated with the poverty-related factors discussed above. However, the high prevalence rates for the most highly educated group was unexpected and apparently counterintuitive; further research is needed to explore the implications of this finding.

15. Differences were also observed on income. Workforce members with household income of Php 20,000 or below during the 6 months prior to the survey (7.30/1000) were more than twice as likely to have TB than those with income of Php 80,000 or higher (3.36/1000).

16. In order to evaluate the interaction between income level and education, a crosstabulation was done with prevalence rates calculated for combinations of income and education category (see Table 1). Findings showed that the highest prevalence rates were among those with at most elementary education and income Php 20,000 or below (8.93/1000). The finding that TB prevalence rates appear to increase in the most educated group was further explored by examining the interaction with income level. In households with less than Php 80,000 income, TB prevalence rates in each income group dropped steadily with increased educational attainment. However, in households earning Php 80,000 or more, the pattern was J-shaped: individuals living in high-income households with post-college education had the highest TB prevalence observed (8.30/1000).

Table 1: Prevalence by Education and Income (Rate per thousand)

Income level	Education				
	Elementary	High School	College	Post College	Total
P20,000 & below	8.93	5.22	2.00	*	7.30
P20,001-40,000	7.22	3.96	0.72	*	5.39
P40,001-60,000	6.49	3.54	3.41	*	3.90
P60,001-80,000	7.49	4.43	2.40	*	4.42
P80,001 & above	4.73	3.32	3.66	8.30	3.36
Total	7.62	3.86	2.50	7.63	4.93

*Fewer than 100 cases
Source : 1998 LFS/APIS

II.E. Prevalence by Employment Characteristics

17. As reported above, analysis of matched LFS/APIS data showed that unemployed members of the workforce were twice as likely to have TB as persons employed in the informal sector and nearly four times as likely to have TB as persons not in the labor force and workers in the formal sector. In order to explore this further, the interaction between labor force status

and education in terms of TB prevalence was examined (see Table 2).[8] Findings showed that differences across workforce categories diminished as education increased, except for persons in formal sector employment. Similarly, prevalence rates in each workforce category group decreased with higher education, with the exception of individuals working in the formal sector. In the latter group, the same j-shaped pattern was observed: prevalence declined with high school but increased with more education. Individuals with post-college education working in the formal sector exhibited the highest prevalence levels observed (10.81/1000).

Table 2: Prevalence by Labor Force Status and Education (Rate per thousand)

Workforce Category	Education				
	Elementary	High School	College	Post College	Total
Not in the Labor Force	5.91	3.11	1.67	*	3.75
Unemployed	5.91	3.11	1.67	*	3.75
Employed, Informal Sector	26.90	10.39	8.25	*	13.15
Employed, Formal Sector	5.49	2.52	3.21	10.81	3.30
Total	7.62	3.86	2.50	7.63	4.93

*Fewer than 100 cases
Source : 1998 LFS/APIS

18. Additional analysis was done on other employment and occupational variables (see Annex D). Some of the key findings include:

- **(i)** Among employed individuals, those involved in family-operated farms/businesses had the highest TB incidence rate (9/1000), followed by self-employed members of the workforce (6/1000) and unpaid workers in family farms/businesses (5/1000). Overall, self-employed individuals were twice as likely to have TB as those working in private households or establishments and government and/or government-owned corporations.
- **(ii)** Permanent and short-term/seasonal/casual workers were 6 % and 24% more likely to have TB, respectively, than those who worked daily or weekly.
- **(iii)** Individuals who worked an average of 1–4 working hours per day exhibited a higher TB incidence rate (8/1000) than those who worked more than four hours a day (i.e., TB incidence appears to decrease as normal working hours/day increases).
- **(iv)** There were significant differences in prevalence by occupation. Farmers, forestry workers, and fishermen were twice as likely to have TB than government officials/managers and trade and related workers, and three times as likely to have TB than technicians. Professionals were 11 to 25% less likely to have TB than

[8] The labor force includes both employed and unemployed persons; "unemployed" is defined as not currently working but available and looking for work. Note that the working age population (15-64 years old) may or may not belong to the labor force.

service and sales workers, clerks, plant/machine operators, and laborers/unskilled workers, in that order.

(v) Prevalence rates also varied significantly by industrial sector. Workers in agriculture were 2.4 times more likely to have TB than those in manufacturing industry and about twice more likely to have TB than those working in the construction, trade, transport/communication and service industries.

III. Demographic and Socioeconomic Profile of TB-afflicted Workforce Groups

19. In order to deepen our understanding of TB-afflicted workforce groups, this section explores the characteristics of the subset of the population with TB[9]. Annex E provides a descriptive profile of 553 TB affected individuals by primary workforce categories (employed in formal sector, employed in informal sector, unemployed, and not in the labor force); variables include sex, age, marital status, education, occupation, industry, urban-rural residence, and region. If one were to construct a profile of the "typical" working-age Filipino who self-reported having had TB, that person would be male, 40 years old or older, married at some point, educated to the high school level, working in agricultural or industrial occupations, and living in a rural area.

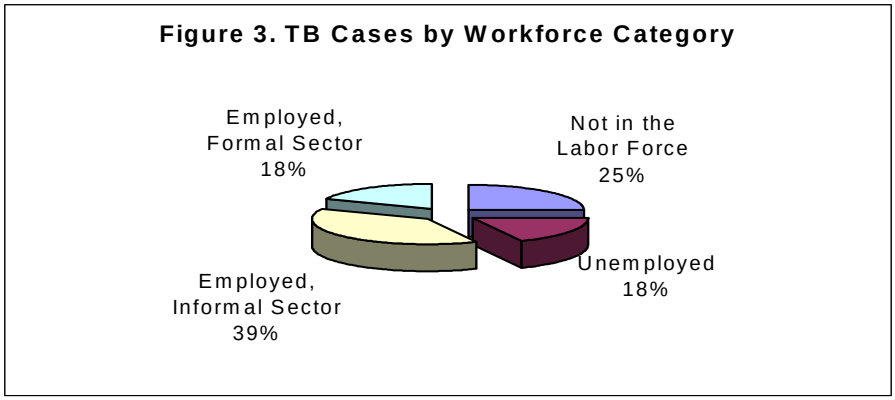
20. Of 553 TB reported cases, 57% were working in either the formal or informal sector. A quarter of the subsample was not in the labor force, with 18% unemployed. Of those working, most (39%) were employed in the informal sector and 18% in the formal sector (see Figure 3)[10]. TB sufferers employed in the formal sector differed from the general workforce population in several respects. They were more likely to be male, 30 years of age or older, married, educated to high school level, and urban dweller. Occupationally, they were more likely to work in farms/forestries/fisheries, as laborers or unskilled/service workers, in services, or in agricultural industries. In contrast, TB-afflicted persons working in the informal sector were slightly older, less educated, less likely to be single, and more likely to live in rural areas. These individuals tended to work in agricultural occupations and/or in industry.

21. Unemployed TB sufferers differed from the profile of the total Philippine workforce with TB. Unemployed sufferers were relatively younger, more likely to be single, and to have slightly higher education. A higher proportion of the unemployed college educated group experienced TB than the college educated workforce in general. In contrast, students, housewives, disabled individuals, and retirees (characterized as "not in the labor force") were more likely to be female, either very young or very old, and living in urban areas.

22. Analysis of regional distribution of persons in the workforce afflicted with TB showed that about 30% resided in NCR, Western Visayas, Southern Tagalog, and Bicol regions. Similar regional distributions characterized TB sufferers employed in the formal sector and those not in the workforce. TB sufferers employed in the informal sector lived primarily in the Southern Tagalog, Western Visayas, Bicol, and Central Luzon regions. However, unemployed TB sufferers lived mostly in the Western Visayas, NCR, and Central Visayas regions.

[9] Note that the percent distribution of TB cases by workforce categories should not be confused with TB prevalence by workforce categories. TB prevalence is a more robust measure than percent distribution in identifying who are most affected with TB in the workforce.

[10] It is encouraging that the observed largest proportion of TB cases among those in the informal sector is also evident with data from the San Juan De Dios TB urban clinic and among those in the oldest ages with data from the Philippine Health Insurance Commission and Vital Registration System (Annex A).



Source: 1998 LFS/APIS

IV. Health-seeking Behaviors of TB Patients

23. The 1997 NTPS revealed that a substantial proportion of TB symptomatics (73.4%) and Bacteriologially-confirmed TB cases (56.9%) did not take action in response to symptoms or merely self medicated. Among TB symptomatics who consulted, the highest preference was for private medical practitioners followed by health centers and hospitals (see Table 3). In contrast, confirmed TB cases consulted health centers the most, followed by hospitals and private doctors. The desired information on health seeking behavior by workforce categories, however, was not available in the 1997 NTPS.

Table 3. Health Seeking Behavior of TB Symptomatics and Bacteriologially-Confirmed TB Cases

Action Taken		TB Symptomatics	Bacteriologially-Confirmed TB Cases
None		49.1	34.5
Self-medication		24.3	22.4
Consulted:		26.6	43.1
Traditional Healer		2.7	3.4
Family Member		2.5	1.7
Health Center		6.5	15.5
Private MD		9.6	10.4
Hospital		5.3	12.1
TOTAL	%	126.6	143.1
	N	1805	58

Source: NTPS (1997): Figures 7 and 8

24. **Overview of Methods.** In order to develop a more in-depth profile of vulnerable workforce segments, 12 focus group discussions (FGDs) and 25 key informant interviews (KIIs) were conducted. Key informants included public and private medical practitioners, government health officials, academic experts, and others. FGD participants were men and women drawn from various occupational groups; half of the participants had TB and half had been referred by their rural health unit (RHU) after exhibiting symptoms of TB.[11] The content of the discussions

[11] Occupational groups represented included (1) farmers/fishermen, (2) construction and transport workers including bus/jeepney/tricycle drivers, (3) sales and service workers, (4) factory workers, (5) professionals (including teachers and police), and (6) unemployed individuals, including dependents.

focused on TB health-seeking behaviors of the working classes. The resultant qualitative data were content analyzed to identify themes and commonalities, as well as variation by occupational sector.[12]

IV.A. Knowledge about TB and First Consultation

25. Professionals and transportation workers tended to be aware of the symptoms of TB and recognized that they had the disease when symptoms appeared. Farmers and unemployed individuals were less familiar with symptoms and typically learned that they had TB only when told by family members or barangay health workers (BHWs). Blue collar workers in service occupations and factory workers learned they had TB from routine annual check-ups or after physical and x-ray exams, even if they felt no symptoms. Other blue-collar factory and service workers learned they had TB due to observing blood-streaked sputum.

26. For most occupational groups, the first consultation occurred at a public health center. The exception was among transport workers, who tended to rely more heavily on private medical centers and company doctors or to self-medicate. Professionals and factory workers consulted both public and private medical sectors, farmers and fisherfolks relied on government hospitals/centers and NGOs, and unemployed individuals consulted all types of facilities (e.g., public, private, NGO, self-medication).

IV.B Reasons for Selecting First Consulted Health Provider

27. Public facilities were preferred by most FGD participants because of their accessibility and free services and drugs. Another perceived positive aspect of seeking help in a public facility was that those facilities treated all types of patients, thus avoiding the social stigma associated with going to a TB clinic. The preference of professionals, factory workers, and some unemployed individuals for private facilities was attributed to their perceived efficiency and confidentiality; this preference was most strongly expressed by participants who had hemoptysis.

28. Self-medication was commonly reported among transport and construction workers. In many cases they had been influenced by advertising messages on radio or television leading them to believe that cough syrup or biogesic can cure coughs. “Other professional” males often postponed consultation because they still felt strong and believed that the symptoms would go away with self-medication. In general, female service and sales workers were more likely to initially consult health service providers in both public and private sectors.

IV.C. Reported Patient Compliance

29. FGD participants were asked about the advice provided by health providers consulted, with their responses (whether positive or negative) representing another type of health-seeking behavior. In general, participants indicated a high level of compliance to health providers’ advice and instructions. However, there was variation by group. Male urban service and transport workers and urban and rural female service workers believed that TB patients totally complied with physician medical prescriptions, as well with midwife and/or barangay health

[12] Annex B describes the qualitative methodology employed, while Annex F provides a detailed discussion of the FGD findings. Annex F also contains discussion of the National Tuberculosis Program using DOTS and suggestions for improving TB control.

worker's instructions. Urban male and rural female professionals and urban male transport and construction workers reported that TB patients did not comply to doctor's prescriptions due to side effects and the perceived burden of taking pills. Some urban male transport and construction workers stated that TB patients often discontinued medications due to initial relief from TB symptoms, or unavailability of drugs.

IV.D. Issues Related to Drugs

30. Participants in all groups expressed recurrent concerns about drugs. This included mention of the timeliness of drug supplies, barriers to drug intake, and high costs.

Timeliness. Service, transport and sales workers, mostly working in the formal sector, indicated that TB drugs usually arrived on time and in adequate quantities to allow patients to complete treatment. Professionals, farmers, unemployed individuals, and construction workers said that medications arrived on time, but acknowledged occasional shortages.[13]

Barriers to drug intake. Urban male and female professionals and urban male and female service workers reported side effects such as headaches and dizziness. Urban male transport workers and urban and rural unemployed males, however, reported no side effects. Rural male farmers, fisherfolks, and female professionals identified pill burden (*nakakalito*) as a barrier to taking drugs as indicated. Farmers and fisherfolk living in remote areas complained that health centers were inaccessible.

High cost. Urban professionals (both male and female), male urban transport and factory workers, and farmers/fisherfolk reported that they had no money to buy drugs; these same groups cited lack of drug supply, side effects, pill burden, and lack of time to go to the health center. Workers in these sectors utilized both private and public health centers. However, the high cost of drugs often motivated those who initially sought treatment in the private sector to go to public health centers for free drugs.

31. No barriers to TB drug intake were reported by male and female urban service and sales workers and some unemployed urban males. This finding may be related to the fact that service and sales workers usually go to company clinics or private medical practitioners and that some unemployed individuals tend to self-medicate.

IV.E. Knowledge of and Attitudes About DOTS

32. In ten of the 12 FGDs, most participants were aware of DOTS, although primarily by the local name (*Tutok Gamutan*). The two FGD groups unaware of DOTS consisted of male professionals and transport workers living in urban areas. Ten of 12 FGD groups also perceived DOTS as helpful in compliance to the daily drug intake of TB patients (the two groups not aware of DOTS were female urban and rural service workers).

33. FGD participants were asked to describe their experiences with DOTS. Rural female professionals, urban male transport workers, urban male unemployed, and farmers/fisherfolk identified their treatment partner as being a family member or Barangay Health Worker; these

[13] Note that, as reported above, this group obtained TB services from both public and private sectors.

groups obtained drugs predominantly from public health centers. Most patients reported going to the health center for their supply of drugs using a follow-up system (i.e., they return the empty TB drug packets to health center) and self-administering drugs. In FGDs consisting of urban male sales and service workers, drivers and self–employed urban males, and unemployed rural males, most participants indicated that they obtained their TB drugs from private medical practitioners, company clinics, or commercial drugstores.

IV.F. Helpful Practices in Recovering From TB

34. There was considerable variation among groups in perceptions of the practices seen as most helpful in recovering from TB (see Table 4).

Table 4. Practices Perceived as Helpful in Recovering from TB

Groups	Factors Considered Most Helpful
Male urban professionals Male urban transport workers Unemployed rural males Rural male farmers/fisherfolk	Uninterrupted, accessible, and affordable supply of drugs
Rural female professionals Urban male transport workers Urban male factory workers	Daily (regular) drug intake and compliance to doctor's instructions and advice
Urban female self-employed Urban male service workers	Good nutrition, regular meals and rest
Urban male unemployed	Regular health center visits

IV.G. Additional Findings on Health-Seeking Behavior from Key Informants

35. All key informants (KIs) agreed that most people in all workforce segments tend to go to public health centers because services and TB treatment are free. However, those who can afford to pay professional fees, including workers in the informal sector, prefer to go to private physicians because of convenience, faster attention, and discretion. Most patients perceive private care to be of higher quality, and also as providing confidentiality regarding what is widely seen as an embarrassing disease. Many workers felt that, at the extreme, the disease could cause them to lose their jobs.

V. Implications: Towards a DOTS Model for the Workforce

V.A Informal/Unemployed Sector

36. Unemployed individuals and workers in the informal sector of the labor force, comprising about 40% of the Philippine workforce, are at the most risk for TB. These workforce segments often lack appropriate health care coverage. They are also mostly below the poverty line and thus lack the ability to pay for needed health services and medicines. Workplaces in the informal sector usually lack an existing organizational structure for implementing a DOTS program. Workers often work irregular hours or spend their time in various dispersed locations. Employees as a group may lack the cohesiveness needed to sustain a support system for the DOTS program. These characteristics suggest that the most appropriate DOTS clinic model for unemployed individuals and workers in the informal sector is private-public collaboration. Ideally, this would be between private physicians and a government health facility.

V.B. Formal Sector

37. About 27% of the Philippines workforce is in this sector. Certain attributes of the formal sector support successful implementation of a DOTS strategy. For example, most private sector companies have:

- **(i)** Existing organizational structures that can be adapted to support implementation and sustainability of a DOTS program
- **(ii)** Concentration and convenience (i.e., employees spend about 50% of their working hours in the workplace)
- **(iii)** Stable and cohesive worker populations that make monitoring treatment easier and more accurate
- **(iv)** At least some health promotion activities.[14]

Despite these enabling factors, only a few companies implement DOTS for their employees, FGD participants suggested that company doctors should expand their hours of work (currently two hours) in the company clinic to attend to employees with TB. Should companies feel that DOTS is impractical, they should find appropriate mechanisms to fulfill DOTS requirements, for example by partnering with public and/or private DOTS providers.

V.C. Not in the Labor Force

38. The remaining 33% of the workforce who are not in the labor force are mostly dependents of economically active members of their households. However, considering their constant and intimate exposure to active members of the labor force, they may be victims; many eventually become active TB transmission agents both within their households and in the community at large. This suggests that a well-designed public-private sector partnership strategy would be appropriate, especially given that the overwhelming majority of this segment lacks adequate health care coverage.

VI. Two Proposed DOTS Models

VI.A Overview

39. This section presents two alternative DOTS models for the workforce. One is for unemployed individuals and workers employed in the informal sector. The other is for those who are employed in the formal sector.

VI.B. Public-Private Model (PPM) DOTS

40. Findings of the rapid appraisal suggest that the most appropriate DOTS model for the unemployed and those employed in the informal sector is a partnership between private physicians and government health facilities. This DOTS model is based on an objective assessment of the relative strengths and weaknesses of public versus private sector providers. If they are to be effective, such partnerships must be carefully designed to take advantages of the comparative advantages of each partner. These may be differentiated as:

[14] Such activities are mandated by the Occupational Health and Safety Standard

Private physicians. Private doctors are perceived, whether accurately or not, as providing better quality care than public doctors. Private physicians should be encouraged to practice the DOTS strategy and partner with the existing government health facilities.

Government health facilities. The public sector has considerable experience delivering TB control services using DOTS, including quality sputum microscopy, regular supply of quality anti-TB drugs, supervised treatment (DOT), and recording and reporting. Government health facilities also often have an image as a source of quality care that can be promoted to both patients and private practitioners.

The strengths of both types of providers should be taken advantage of in DOTS program design and implementation. Over time, the partnering relationship will strengthen the capabilities for both providers.

41. Using the five elements of DOTS as the framework, identified strengths (√) and weaknesses (x) of private physicians and government health facilities are shown in Table 5.

Table 5. Strengths and Weakness of Private Physicians, Government Facilities, and NGO Health Facilities

Elements of DOTS	Private Physician	Government Health Facility	NGO Health Facility
Political Commitment	✔	✔	✔
Case finding (quality sputum microscopy) Identification of TB symptomatics Sputum collection Sputum microscopy	✔	✔ ✔ ✔	✔ ✔ ✔
Drug supply	Patient Buys own meds	✔	✔ ✕
Management of TB Cases Directly observed treatment (treatment partner) Defaulter tracing Monitoring of treatment (follow-up sputum examination	✕ ✕ by signs and symptoms or x-ray	✔ ✔ ✔	✔ ✔ ✔
Recording and Reporting Laboratory Registry TB Registry Treatment Card	✕ ✕ ✕	✔ ✔ ✔	✔ ✔ ✔

42. The PPM DOTS model proposed for unemployed individuals and those working in the informal sector is shown in Figure 4. The objective of this model is to effectively provide DOTS to all patients regardless of their initial choice or entry point. This model is based on the following general principles.

(i) The patient initially visits either a private physician or Rural Health Unit (RHU) for consultation on symptoms.

(ii) If the patient chooses to consult a private physician, he or she may be referred to the nearest public DOTS Center (RHU) or private/NGO hospital/clinic for sputum microscopy. Results are reported back to the attending physician and the necessary advice for treatment is given. If the patient can afford to pay for drugs, he or she may do so; however, the physician continues to ensure direct observation of treatment.

(iii) Alternatively, the patient may be referred to the RHU for direct observation of treatment and advised to return to the private physician for follow-up examination. If the patient chooses to go to the RHU, all phases of treatment (e.g., from case finding to case holding and eventually to completion of treatment) will be undertaken in the facility.

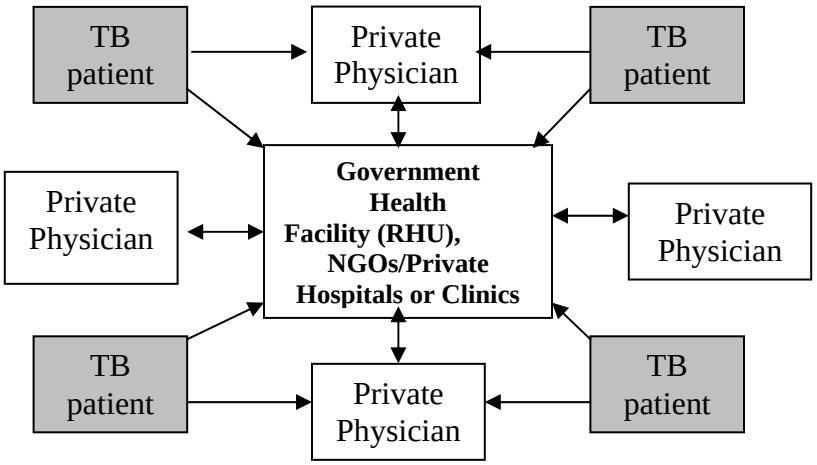
(iv) Private physicians refer patients to the RHU or private/NGO hospital/clinic whenever necessary for sputum examination or directly observed treatment.

(v) In areas where NGOs provide DOTS services, patients of private physicians may be referred to that NGO facility, which effectively serves as the DOTS center (rather than the RHU).

(vi) RHUs consistently encourage patients to return to their private physician for follow-up examination.

The key to effectively implementing this model is to build patient confidence in the quality of care provided by the partnership. Such credibility should also contribute to expanded cooperation in such areas as training private physicians on basic DOTS.

Figure 4: DOTS Model for the Unemployed and Those Employed in the Informal Sector



43. **Key Success Factors.** In order for this PPM model of DOTS treatment to be effective, and number of success factors must be put in place:

Information/social marketing campaign. Systematic education and marketing efforts are required to build community awareness; this includes knowledge of TB symptoms, the importance of early diagnosis and completion of treatment, and locations of available DOTS services. The objective of this campaign is to increase awareness, improve appropriate health-seeking behaviors, and alleviate the stigma typically associated with TB. Such information campaigns should be targeted on the workforce, especially unemployed individuals and those working in the informal sector. To be effective, organizations or organized groups in the informal sector should be enlisted to help deliver accurate TB information.

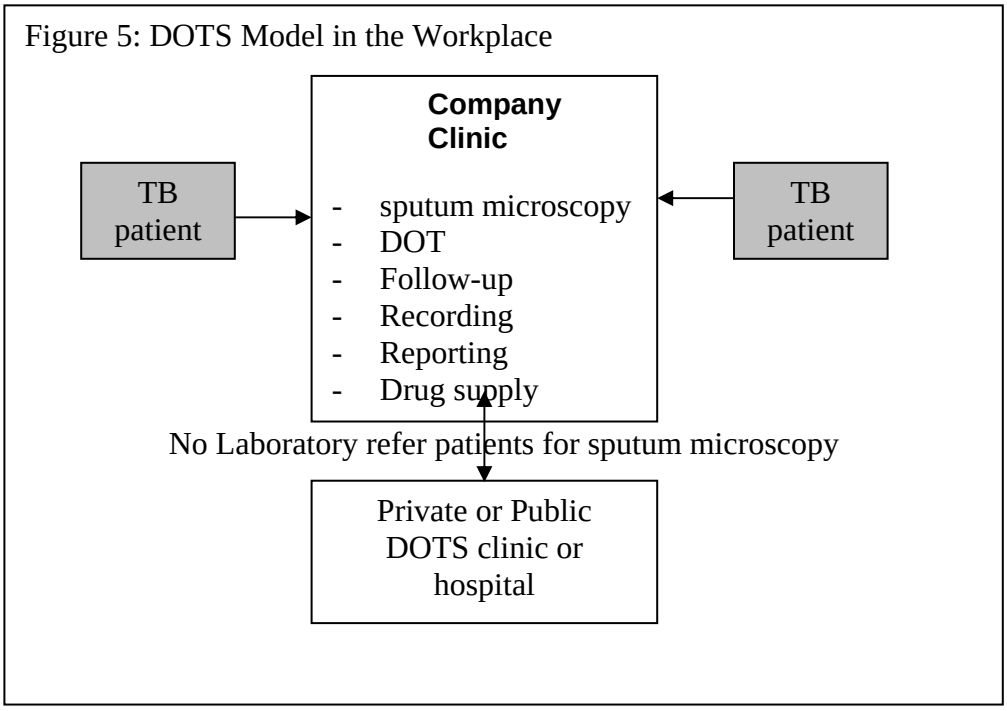
Capacity building among physicians. Medical practitioners need to be actively educated to participate in the delivery of DOTS. This can be accomplished through an information and education program to increase awareness, acceptance, and use of DOTS among private medical practitioners. One useful component would be incorporating presentations and papers on DOTS into the agendas of scientific meetings and professional associations.

Improving incentives. Private medical practitioners should be given meaningful incentives for referring patients to the DOTS unit, whether public or private. For example, the PHIC TB outpatient benefit is a financial incentive for private practitioners to practice DOTS.

Supporting existing facilities. Government DOTS facilities and existing private DOTS units (e.g., DOTS units of the Philippine Tuberculosis Society, German Doctors and other NGOs) should be promoted to private medical practitioners as key resources to support their practice of DOTS.

VI.C. Fully Private DOTS Model in the Workplace

44. For workers employed in the formal sector, the recommended model is fully based in the private sector, with appropriate support from external resources. This model is shown graphically in Figure 5.



45 For those employed in companies with a clinic, the clinic may be converted into a DOTS Center, with TB services being delivered in the workplace. If the clinic is unable to provide all DOTS components, other services may be obtained from outside sources (i.e., a company might not have laboratory facilities for sputum microscopy). Patients may be referred to the nearest health facility with quality sputum microscopy services; such facilities might be in either public or private sectors and could include NGO facilities providing DOTS services. Drugs may be provided by the company, reimbursed through an HMO, or provided by the government. Directly observed treatment can be done in the workplace.

46. **Key Success Factors**. Following are specific actions that will encourage corporations (both private and public) to deliver DOTS services to their employees affected by TB.

Corporate/organizational education. Systematic efforts must be made to build awareness of TB and DOTS among private corporations to enlist their support. Workplaces with high risk of TB should be identified and prioritized. Commitment to participate in the control of TB should be solicited from this sector.

Identification of needed supplemental resources. Resources available in the private sector should be identified. Companies with clinics participate in the delivery of the DOTS strategy, but lack expertise or resources in certain areas. Referral to existing DOTS facilities (public or private) should be actively encouraged.

VII. Summary and Recommendations

47. **Summary.** Findings of this study show that TB prevalence was higher among unemployed individuals and those employed in the informal sector. Both groups, after experiencing TB symptoms, generally consult with either a private physician or a government

health facility (usually the RHU). The particular choice is shaped by availability of money. Individuals who can afford it preferring the services of a private physician. Reasons for this preference include perceived higher quality services, discretion, and faster results.

48. However, most private physicians who treat TB patients are not aware of and do not practice DOTS. Rather than conforming to the five elements of DOTS, they treat TB using traditional medical interventions and sometimes inappropriate methods. The preferred mode of diagnosis is x-ray given its convenience. There is generally no monitoring of response to treatment, poor documentation, and lack of physician awareness regarding whether or when the patient is cured.

49. Patients who cannot afford to pay, or who discover that the cost of drugs or professional fees in the private sector is beyond their means, are generally treated in government health facilities which offer free drugs. In government facilities, the DOTS strategy is utilized. However patients have less confidence in government services and their services are perceived to be of poor quality.

50. **Recommendations.** Based on the findings of this research, five broad recommendations for improving delivery of DOTS services to the Philippine workforce were developed.

51. ***Comprehensive, holistic approach*.** Health care professionals and DOTS program designers must adopt a comprehensive perspective on the etiology of TB. The disease has many contributing factors, and interventions should be designed based on an understanding of both social factors and medical aspects of TB.

52. ***Broad-based information, education, and communications*.** All sectors must be properly informed and educated about the many dimensions of TB, including an understanding of prevention and appropriate cure (DOTS). IEC activities should include major emphases on (i) alleviating the social stigma associated with TB, and (ii) increasing community awareness of the dangers of the disease.

53. ***Convergence of public and private sectors*.** There is a pressing need for effective public-private sector partnerships. Particularly important are advocacy and education efforts directed to private medical practitioners. Such professionals need to learn about and come to appreciate the curative potential of DOTS. If offered appropriate incentives (i.e., linking DOTS to appropriate income opportunities), private physicians can play an increasingly important role.

54. ***Empowering local executives*.** Local government officials need to become more involved in supported community-based DOTS programs. Even though the National Tuberculosis Program (NTP) is not an officially devolved program, enlisting local executives will increase the visibility and effectiveness of DOTS interventions.

55. ***Building private sector support*.** High priority should be given to encouraging private companies to increase their commitment to control TB. Accomplishing this will require coordinated information campaigns to convince private sector executives and entrepreneurs that they have a community responsibility to support TB control.

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Annex A
ANALYSIS OF NATIONAL TB PREVALENCE FROM VARIOUS DATA SOURCES

To assess the TB situation in the Philippine workforce, the study examined all available secondary data sources. Data studied may be classified as (i) service statistics, (iii) surveys, and (iii) TB expenditure claims data.

Service statistics consist of data from health service centers such as the Field Health Service Information System (FHSIS), hospital discharge statistics (HOSIS), and the vital registration system. Local clinic information was also used in order to better understand the TB service clientele at the ground level. Clinic records of TB services delivered at San Juan De Dios Clinic in Quiapo, Manila were analyzed in terms of age, sex, occupation and workplace distribution.

Surveys include TB-focused surveys such as the National TB Prevalence Survey (NTPS) or other TB-related surveys with a different primary objective. Sources included the Labor Force Survey/Annual Poverty Incidence Survey (LFS/APIS) and the National Demographic and Health Survey (NDHS).

TB expenditure claims data from government agencies processing welfare assistance claims by TB patients in the workforce and their dependents. Agencies providing this type of services include the Philippine Health Insurance Commission (PHIC), Social Service System (SSS), and Employees' Compensation Commission (ECC).

The surveys and the service statistics were used to evaluate prevalence or level measures. The APIS data offered the widest possibility to respond to the major objectives of the study. As a rider to the quarterly Labor Force Survey (LFS), the APIS data can be linked to the LFS data to generate the labor force classification and the workforce segments of interest. In addition, APIS data provide more socioeconomic and demographic variables for further examination of TB prevalence by workforce segments. Hence, the merged 1998 LFS and APIS data together with the qualitative data gathered through FGDs and KI interviews were used as principal sources of data analyzed in the main report.

This technical report covers and examines all available data sources in order to "triangulate" information to estimate TB prevalence in the Philippine workforce. This allows a clearer identification of which workforce groups are mostly affected by the disease and how they can be better served by DOTS.

National TB Prevalence

Examination of almost all available data sources in order to assess the magnitude of TB prevalence in the Philippine workforce revealed that there is no such indicator generated by any government or non-government agency in the country. Table A.1 organizes various estimates of latest national TB prevalence rates from available sources. The rates range from 1.0 to 4.9 per 1000 population. The comparability of the estimates, however, is hampered by differences in the definition of who has TB and in the data collection design and age coverage of the data sources.

Table A.1. TB Prevalence Rates from Various Data Sources

Data Sources	TB Prevalence Rate
Hospital discharges (2000)	1.01/1000 total pop
FHSIS* (1998)	2.14/1000 total pop
FHSIS** (1998)	2.071000 total pop
NDHS*** (1998)	2.24 / 1000 households
NTPS**** (1997)	3.1/1000 pop 10+
NTPS**** (1997)	3.34/1000 pop 15-64
APIS***** (1998)	4.93/1000 pop 15-64
* Total TB Diagnosed Cases [New Sputum(+)initiated treatment + old sputum (+) being re-treated + X-ray (+) initiated treatment]	
**Total Notifiable TB all kinds (TB respiratory+TB meningitis+TB other forms)	
*** Based on TB diagnosed member in the household who is currently taking anti TB medicines	
**** Smear+	
***** Self- reported TB illness during the past 6 months	

The lowest estimate for all ages came from data on discharges from hospitals nation-wide due to TB confinement; results here showed an estimated national prevalence rate in 2000 of 1.01 per 1000 total population. This is not surprising as only those who sought hospital care and were admitted are included. The estimate does not specifically refer to those in the working ages, with the data referring to aggregated values of discharges.

Also analyzed were estimates from the 1998 FHSIS of the Department of Health (DOH, 1998:89 and 197) based on diagnosed TB cases (new sputum(+) initiated treatment plus old sputum (+) being re-treated plus X-ray (+) initiated treatment) and on notifiable TB disease all kinds (TB respiratory, TB meningitis and TB other forms). Findings show that about 2 persons per 1000 population were TB cases or twice the rate resulting from hospital discharges. This was expected to yield higher figures than the hospital discharge data because more individuals tend to consult public health centers than hospitals; in addition, many public health centers do not require nor prefer hospitalization.

However, it should be reiterated that the FHSIS deals with service statistics and thus underestimates the population rate (i.e., persons who are sick but who do not go through the public health system are excluded). Moreover, the service statistics are also aggregate data with no age specification.

Following very closely is the estimate of the 1998 National Demographic and Health Survey (NDHS), reported as 2.2 per 1000 of household population diagnosed to have the illness and taking medication. Each respondent in NDHS sample households was asked whether any member of the household was taking anti-TB medicines at the time of the survey. In view of the definition of who has TB, the rate is obviously underestimated. Again this measure refers to all persons without age specification.

The National TB Prevalence Survey (NTPS), conducted in 1997 by the Tropical Disease Foundation, Inc. revealed that 3.1 per 1000 population 10 years old and over had bacteriologically confirmed tuberculosis or are smear positives (TDFI, 1997: Table 34, p.68).

Fortunately the 1997 NTPS allows disaggregation by age; hence, it is taken as the first step in assessing the prevalence among the working age population. Using the NTPS 1997 and applying the adjustment factor of 1.0761 to account for differential age coverage, about 3.34 per 1000 working-age population (ages 15-64 years) were determined to be smear positives and show a slightly higher rate than the 10 years old and over group.

Vital Registration Data

To corroborate what the LFS/APIS data revealed, data from the vital registration system were also analyzed. While deaths reported to the vital registration system are known to be incomplete, the pattern of distribution of these deaths by age is relevant. Data from the 1995 and 1997 vital registration systems, shown below, are consistent with the pattern observed in the 1998 LFS/APIS. That is, older age groups (50 and older) manifest the highest proportion of people dying of TB. According to the vital registration data, most persons who died of TB are aged 50-74 years. The drop in the proportion of deaths due to TB after age 74 may also reflect of the much lower proportion of people in the very advanced age groups.

Table A.2: Proportion of Deaths due to Tuberculosis
By Age Group: 1995 & 1997

Age	Year	
	1997	**1995**
Under 1	0.13	0.18
1-4	0.49	0.66
5-9	0.49	0.54
10-14	0.72	0.65
15-19	1.20	1.18
20-24	1.93	1.85
25-29	3.05	3.01
30-34	3.75	3.78
35-39	5.00	4.76
40-44	5.89	5.94
45-49	7.46	7.31
50-54	8.06	8.22
55-59	9.71	9.98
60-64	11.84	11.53
65-69	11.70	11.63
70-74	10.39	10.60
75-79	9.11	8.75
80-84	5.23	5.68
85 Over	3.67	3.56

Not Stated	0.19	0.18
Total	100.0	100.0

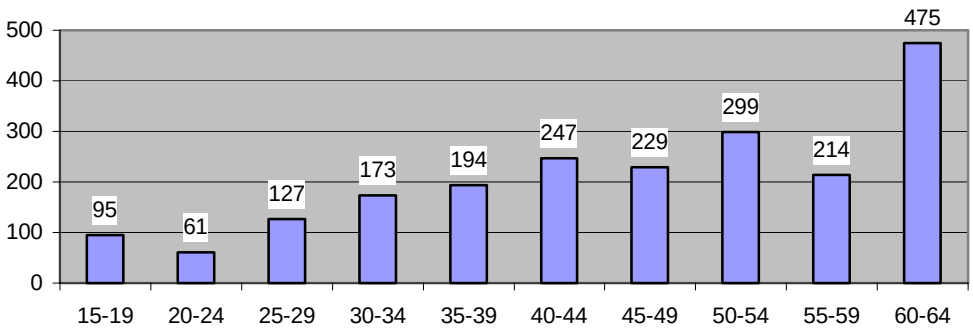
Sources: 1995 & 1997 Vital Registration

PhilHealth Data

Other data sources, such as that drawn from the Philippine Health Insurance Commission (PHIC or PhilHealth), also confirm the age gradient (Figure A.1). PHIC claims made by 5,747 persons due to TB amounted to P 23.944 million in 2002. Of these patients, 2,114 belonged to the working ages comprising both the PHIC members and their dependents.

While the data is a weak source of validating prevalence per se, it confirms that TB is more prevalent among the oldest members of the workforce as the above-mentioned data sources show.

Figure A. 1: No. of claims by age group (15-64)
Philippine Health Insurance Commission



Source: Corporate Planning Dept, Philippine Health Insurance Corporation

Urban Hospital

Analysis by gender allowed confirmation at the urban clinic level in 2000. Specifically, there were slightly more males (51%) than females (49%) diagnosed with TB at the San Juan de Dios TB Clinic (Cabigon and Saturay, 2003). Of 1,585 persons who sought medical treatment in this clinic, about 19% (n=303) were diagnosed to have TB. A breakdown of patients by age group and gender is shown in Table A.3.

Table A.3: Proportion of Patients with TB by Age and Sex

Age	Both sexes	Male	Female
0-4	2.0	2.6	1.4
5-14	5.0	3.8	6.1
15-24	13.2	14.7	11.6
25-34	14.5	12.2	17.0
35-44	18.8	21.2	16.3
45-54	18.5	17.9	19.0
55-64	16.2	16.0	16.3
65 +	11.9	11.5	12.2
Total	**100.0**	**100.0**	**100.0**
N	**303**	**156**	**147**

Source: San Juan de Dios TB Clinic (Cabigon and Saturay, 2003).

These data, then, reveal that older persons are more likely to be afflicted with TB, with a slight reduction observed in the much older ages. This observation further confirms patterns observed in the LFS/APIS survey and the vital registration data.

Table A.4 shows a breakdown by workforce category and gender. Findings are consistent with the results from the LFS/APIS. The workforce segments least hit by TB are those working in the formal sector of the economy. In terms of gender, unemployed males, those working in the informal sector and females not in the labor force are most likely to be ill of TB.

Table A.4 Proportion of Patients with TB by Workforce Category and Sex

Categories	Both sexes	Male	Female
Total workforce	61.6	89.4	32.4
Employed, formal sector	5.1	6	4.2
Employed, informal sector	22.9	34.7	10.6
Unemployed	33.6	48.7	17.6
Not in the labor force	32.9	7.3	59.8
No information	5.5	3.3	7.7
Total	**100.0**	**100.0**	**100.0**
N	**292**	**150**	**142**

Source: San Juan de Dios TB Clinic (Cabigon and Saturay, 2003).

Annex B
QUALITATIVE DATA COLLECTION METHODOLOGY

Focus Group Discussions (FGD) and Key Informant (KI) interviews were conducted in July 2003 by the Demographic Research and Development Foundation (DRDF) and the Philippine Tuberculosis Society, Inc. (PTSI). The study was intended to: (1) fill in gaps from the quantitative analysis, (2) provide perspective for the statistics/findings in quantitative data, and (3) collect data on the health-seeking behavior of potential beneficiaries of TB services.

For addressing the health seeking behavior patterns of workers, 25 key informant interviews were conducted to identify workplaces significantly affected by TB or vulnerable to TB. Key informants came from private and public TB practitioners, health officials, and health social science practitioners, among others. The schedule of KI interviews is found in Table B.1.

Separate FGDs were conducted for males and females in the following occupation groups: (1) farmers/fisherfolk, (2) construction and transport workers, including bus/jeepney/tricycle drivers, (3) sales and service workers, (4) factory workers, (5) professionals (including teachers and police), and (6) unemployed persons, including dependents. Half of the FGD participants had TB and the other half exhibited symptoms of TB as referred by the RHU. The list of completed FGDs are in Table B.2.

FGDs were conducted in Metro Manila and selected economic zones in the country in close collaboration with academic and health institutions in the regions as identified by DRDF and PTSI. Selected sites for FGDs and in-depth interviews included Metro Manila and Bicol for Luzon, Cebu, Samar and Leyte for Visayas, and Davao and Cagayan de Oro for Mindanao. They were selected due to the higher TB prevalence rates in these areas.

Key informants (KIs) were also interviewed in each location where FGDs were conducted. The KIs included one public and one private medical practitioners plus a Health Official in each area.

Table B.1 Implementation Schedule of KI Interviews

PLACE	DATE	DESIGNATION
Quezon City	11 July	Public Medical Practitioner
Quezon City	11 July	Private Medical Practitioner
Legaspi City	25 July	Chairman, Committee on Health, Daraga, Albay
Legaspi City	25 July	Consultant and former Chief, Albay Chest Clinic and Dispensary
Legaspi City	25 July	Provincial Health Officer
Sorsogon City	26 July	City Health Officer
Tacloban City	27 July	Private Medical Practitioner
Tacloban City	27 July	Private Medical Practitioner
Tacloban City	27 July	Private Medical Practitioner
Tacloban City	27 July	Public Medical Practitioner
Tacloban City	27 July	Municipal Health Official
Cagayan do Oro City	26 July	City Health Officer
Cagayan do Oro City	26 July	Private Medical Practitioner
Cagayan do Oro City	26 July	Regional TB Coordinator
Cebu City	24 July	Public Medical Practitioner
Cebu City	24 July	Private Medical Practitioner
Cebu City	24 July	Health Official
Tagum City	28 July	Public Medical Practitioner
Tagum City	28 July	Private Medical Practitioner
Tagum City	28 July	Chairman, Health Committee
National Capital Region	26 August	Sociologist
National Capital Region	27 August	Economist
National Capital Region	28 August	Public Administration
National Capital Region	29 August	Anthropologist

Table B.2 Implementation Schedule of FGDs

LOCATION	DATE HELD	TIME	OCCUPATION	INCOME CLASS	PLACE OF RESIDENCE	GENDER
Quezon City	11 July	1000H	Professionals	Class C	Urban	Male
Pasay City	11 July	1000H	Blue collar (transportation, construction)	Class CD	Urban	Male
Legaspi City	25 July	1000H	Unemployed	Class E	Rural	Male
Sorsogon City	26 July	1000H	Farmer/ fisherfolk	Class CD	Rural	Female
Tacloban City	26 July	1000H	Farmer/ fisherfolk	Class CD	Rural	Male
Tacloban City	27 July	0900H	Professionals	Class C	Rural	Female
Cagayan de Oro	25 July	1400H	Factory worker	Class BC	Urban	Female
Cagayan de Oro	26 July	0900H	Unemployed	Class E	Urban	Male
Cebu Cty	25 July	1000H	Blue collar (transportation, construction)	Class CD	Urban	Male
Cebu City	26 July	0900H	Factory worker (manufacturing)	Class BC	Urban	Male
Tagum City	28 July	1000H	Blue collar (sales, service)	Class CD	Urban	Female
Tagum City	29 July	0900H	Blue collar (sales, service)	Class CD	Rural	Female

Annex C
DEFINITION OF WORKFORCE SEGMENTS

The working age (15-64 years) population or the **workforce** may or may not belong to the labor force. The **labor force** consists of the employed and the unemployed. **Employed** persons include all those who were 15-64 years old as of their last birthday and who are reported either at work or with job but not at work.

For this study, the employed are subdivided into two groups, those who are working in the formal and in the informal sectors. Workers in government or government-owned corporations, as well as those in private establishments, are considered as being employed in the formal sector. This category includes not only persons working for the government or a government corporation, but also those working in private industry or for a religious group, missionary, union, or non-profit organization.

All other workers not included in the formal sector are classified as workers in the informal sector. They include those who are employers, self-employed, those who work for private households, those who work with pay on own family-operated farm or business and unpaid family workers or those who work without pay on own family-operated farm or business.

Unemployed persons include those who are not working but who are available and looking for work. Persons who are not looking for work because of reasons such as housekeeping, schooling, etc. are considered not in the labor force. Examples are housewives, students, disabled or retired persons.

Annex D
TB Prevalence Rates by Selected Socioeconomic Factors

Selected Socio-economic Factors	Prevalence Rate (per thousand)
Workforce Categories	
.00 Not in the Labor force	3.75
1.00 Unemployed	13.15
2.00 Employed, Informal Sector	5.75
3.00 Employed, Formal Sector	3.30
Highest Educational Attainment	
1 Elementary	7.62
2 High school	3.86
3 College	2.50
4 Post college	7.63
8 No information	10.07
Total Household Income	
1 P 20,000 and below	7.30
2 P 20,001 – 40,000	5.39
3 P 40,001 – 60,000	3.90
4 P 60,001 – 80,000	4.42
5 P 80,001 - and above	3.36
Type of Place of Residence	
1 Urban	4.63
2 Rural	5.22
Region	
1 Ilocos	3.07
2 Cagayan Valley	4.37
3 Central Luzon	4.06
4 Southern Tagalog	5.47
5 Bicol	8.59
6 Western Visayas	10.10
7 Central Visayas	3.93
8 Eastern Visayas	3.41
9 Western Mindanao	4.20
10 Northern Mindanao	2.79
11 Southern Mindanao	3.24
12 Central Mindanao	3.85
13 National Capital Region	5.52
14 CAR (Cordillera Administrative Region)	1.95
15 ARMM (Autonomous Region of Muslim Mindanao	2.03
16 Caraga	1.70

Province	
1 Abra	5.87
2 Agusan del Norte	1.25
3 Agusan del Sur	1.82
4 Aklan	3.14
5 Albay	6.44
6 Antique	10.72
7 Basilan	0.00
8 Bataan	4.20
9 Batanes	*
10 Batangas	1.12
11 Benguet	0.00
12 Bohol	4.36
13 Bukidnon	3.87
14 Bulacan	7.24
15 Cagayan	4.86
16 Camarines Norte	1.46
17 Camarines Sur	9.02
18 Camiguin	9.90
19 Capiz	4.80
20 Catanduanes	8.96
21 Cavite	1.78
22 Cebu	4.16
23 Davao	1.85
24 Davao del Sur	3.80
25 Davao Oriental	0.00
26 Eastern Samar	1.75
27 Ifugao	4.48
28 Ilocos Norte	1.27
29 Ilocos Sur	6.52
30 Iloilo	12.43
31 Isabela	4.42
32 Kalinga	3.86
33 La Union	2.00
34 Laguna	4.38
35 Lanao del Norte	0.91
36 Lanao del Sur	0.00
37 Leyte	3.89
38 Maguindanao	3.82
39 Manila	7.81
40 Marinduque	9.26
41 Masbate	11.16
42 Misamis Occidental	3.61
43 Misamis Oriental	1.66
44 Mountain Province	0.00
45 Negros Occidental	10.86
46 Negros Oriental	3.32

47 North Cotabato	5.67
48 Northern Samar	6.61
49 Nueva Ecija	3.63
50 Nueva Vizcaya	4.95
51 Occidental Mindoro	12.10
52 Oriental Mindoro	31.40
53 Palawan	1.02
54 Pampanga	0.96
55 Pangasinan	2.86
56 Quezon	3.56
57 Quirino	4.13
58 Rizal	5.22
59 Romblon	9.77
60 Samar (Western)	3.86
61 Siquijor	0.00
62 Sorsogon	12.00
63 South Cotabato	4.56
64 Southern Leyte	0.00
65 Sultan Kudarat	4.74
66 Sulu	0.00
67 Surigao del Norte	2.48
68 Surigao del Sur	1.29
69 Tarlac	4.60
70 Taw-Tawi	6.91
71 Zambales	4.55
72 Zamboanga del Norte	0.00
73 Zamboanga del Sur	6.32
74 NCR - 2nd District	5.43
75 NCR - 3rd District	5.06
76 NCR - 4th District	3.83
77 Aurora	7.04
78 Biliran	0.00
79 Guimaras	5.43
80 Saranggani	5.91
81 Apayao	0.00
98 Marawi City and Cotabato City	3.50
Class of Worker	
0 Private household	3.24
1 Private establishment	3.46
2 Government/government corporation	2.65
3 Self-employed	6.00
4 Employer in own family operated farm/business	9.41
5 With pay in own family operated farm/business	0.00
6 Without pay in own family operated farm/business	4.77

Nature of Employment	
1 Permanent	4.51
2 Short term/seasonal/casual	5.27
3 Worked daily or on weekly basis	4.26
Working Hours	
1 1 - 4 hours	8.72
2 5 - 8 hours	4.38
3 9 - 12 hours	3.11
4 13 - 16 hours	1.25
Occupation	
.00 Special Occupations	0.00
1.00 Officials of Gov't and Special Interest Orgs & Managers	2.90
2.00 Professionals	4.76
3.00 Technicians and Associate Professionals	1.79
4.00 Clerks	4.11
5.00 Service Workers & Shop & Market Sales	4.24
6.00 Farmers, Forestry Workers & Fishermen	6.38
7.00 Trades and Rel. Workers	3.25
8.00 Plant & Machine Operators and Assemblers	3.94
9.00 Laborers and unskilled workers	3.58
Industry	
1.00 Agriculture	6.43
2.00 Mining	0.00
3.00 Manufacturing	2.68
4.00 Energy	0.00
5.00 Construction	3.55
6.00 Trade	4.03
7.00 Transpo&Communication	3.77
8.00 Financial	0.00
9.00 Service	3.99
TOTAL	**4.93**

*Less than 100 cases
Source: 1998 LFS/APIS

Annex E
Socioeconomic Profile of Persons Sick with TB during the Past 6 Months

Socio-Economic Factors	Work Force Categories				
	Total	Employed, Formal Sector	Employed, Informal Sector	Un-employed	Not in the Labor Force
Sex					
Male	63.5	77.2	70.1	76.0	34.1
Female	36.5	22.8	29.9	24.0	65.9
Total	100.0	100.0	100.0	100.0	100.0
Age					
15-19	9.0	5.8	4.2	9.0	18.8
20-29	9.7	15.5	3.7	18.0	8.7
30-39	14.6	17.5	16.8	11.0	11.6
40-49	19.3	28.2	18.2	20.0	13.8
50-59	29.0	19.4	37.4	29.0	23.2
60-64	18.4	13.6	19.6	13.0	23.9
Total	100.0	100.0	100.0	100.0	100.0
Marital Status					
Single	19.6	18.8	10.7	30.7	25.9
Married	69.7	77.2	78.0	59.4	59.0
Widowed	9.5	3.0	10.7	6.9	14.4
Divorced/Separated	1.1	1.0	0.5	3.0	0.7
Total	100.0	100.0	100.0	100.0	100.0
Highest level of education					
Elementary	54.7	50.5	65.1	52.1	43.4
High school	32.9	31.9	26.8	36.5	40.4
College	6.8	13.2	1.9	9.4	8.1
Post college	0.4	2.2			
No information	5.3	2.2	6.2	2.1	8.1
Total	100.0	100.0	100.0	100.0	100.0
Occupation					
Officials of Gov't and Special Interest Orgs & Managers	2.8	9.0			
Professionals	2.2	5.0	1.0		
Technicians and Associate Professionals	1.9	6.0			
Clerks	12.9	9.0	15.1	11.8	
Service Workers & Shop & Market Sales	7.9	12.0	6.5		
Farmers, Forestry Workers & Fishermen	53.0	25.0	67.3	47.1	
Trades and Rel. Workers	3.8	4.0	3.0	11.8	
Plant & Machine Operators and Assemblers	3.2	5.0	2.5		
Laborers and unskilled workers	12.3	25.0	4.5	29.4	
Total	100.0	100.0	100.0	100.0	

Industry					
Agriculture	53.3	26.0	67.0	50.0	
Mining	0.0			0.0	
Manufacturing	6.0	10.0	4.0	6.3	
Energy	0.0	0.0			
Construction	5.0	11.0	1.0	18.8	
Trade	13.9	12.0	15.0	12.5	
Transpo&Communication	5.7	11.0	2.5	12.5	
Service	16.1	30.0	10.5	0.0	
Total	100.0	100.0	100.0	100.0	
Urbanity					
Urban	46.8	61.4	27.7	49.5	63.8
Rural	53.2	38.6	72.3	50.5	36.2
Total	100.0	100.0	100.0	100.0	100.0
Region					
Ilocos	3.4	3.0	2.8	4.0	4.3
Cagayan Valley	3.3	3.0	6.1	0.0	1.4
Central Luzon	8.9	9.0	10.4	7.9	7.1
Southern Tagalog	15.2	13.0	20.8	6.9	14.3
Bicol	11.2	10.0	11.8	8.9	12.9
Western Visayas	17.0	24.0	16.0	19.8	11.4
Central Visayas	5.8	0.0	4.7	10.9	7.9
Eastern Visayas	3.4	5.0	4.2	2.0	2.1
Western Mindanao	3.3	3.0	3.8	5.0	1.4
Northern Mindanao	2.4	1.0	2.4	4.0	2.1
Southern Mindanao	4.0		5.7	5.0	3.6
Central Mindanao	2.5	2.0	0.9	7.9	1.4
National Capital Region	17.0	26.0	7.5	15.8	25.7
CAR (Cordillera Administrative Region)	0.9		0.9		2.1
ARMM (Autonomous Region of Muslim Mindanao	1.1	0.0	0.9	1.0	2.1
CARAGA	0.7	1.0	0.9	1.0	
Total	100.0	100.0	100.0	100.0	100.0
No. of Cases	553	101	214	101	138

* p< .05
** p< .01
*** p < .001

Source: 1998 LFS/APIS

Annex F
DISCUSSION OF FGD FINDINGS

Results showed that most FGD participants were aware of the roles played by malnutrition, environmental contamination, and work-related "injury" (referred to as "stressful work") in causing a person to fall sick of TB. That this awareness was pervasive in all sectors of the workforce reflects sound health beliefs and attitudes held towards TB. While misconceptions about TB transmission were held by some, these could be corrected by health education at the individual level.

Factors recognized by FGD participants as reducing body resistance and leading to TB infection were: (1) stressful work, (2) irregularity of working hours and (3) workplace exposure to people with TB and to the elements and substances. They also recognized that those with low education are usually employed in low paying jobs that demand manual labor. Given typically large family sizes, manual laborers need to work hard to support their families, as expressed by blue collar and services worker groups, farmers and fisherfolks, informal sector workers in transportation, and the self-employed.

White-collar workers (teachers, office employees) pointed out the need to work hard and to take on extra hours to support a large family because of their meager earnings. Since the level of investment and the choice of technology determine the level, composition and spatial distribution of the demand for labor in the country, poverty was seen by all FGD participants as highly associated with being or becoming sick of TB.

All occupational groups relied on public health service providers, either entirely or in combination with private medical practitioners, private hospitals/clinics or NGOs providing specialized TB services. Those who relied entirely on public health services were largely poor individuals or those residing in rural areas. TB services and drugs are free in such centers, and the public health centers have wide geographic coverage (including most rural areas). Those who have an income or the means to pay preferred private practitioners/centers due to their perceived efficiency and confidentiality. In most cases, however, they later turned to the public health sector after realizing the cost of medication required for total recovery. Self-medication was resorted to by those with low education and income.

Poverty was identified as the underlying cause of TB. Poverty increases vulnerability to infection through factors such as low food intake, environmental contamination, biological factors, and injury from work or other activities, and stress and worries. Economic and social development (as reflected by increased income, higher educational attainment, and improved nutrition) leads to higher labor force participation rates and greater productivity. Economic and social development would also lead to increased supply and demand for health services, in general, and to greater capacity to utilize health services to control TB.

The National Tuberculosis Program Using DOTS Strategy According to the KIs anD FGDs and Suggestions for Improving TB Control

Understanding of and familiarity with DOTS varied widely. Although key informants agreed that DOTS is a very effective TB control strategy being implemented by the government, only two (2) KIs (a private MD working for an NGO and a City Health

Officer) were able to enumerate all five (5) elements of DOTS. The majority could only cite, at most, 3 elements:

(i) Continuous supply of drugs
(ii) A treatment partner to ensure compliance
(iii) TB microscopy as the primary diagnostic tool

Most FGD participants were aware of DOTS as a strategy for TB treatment and believed that DOTS, particularly the provision of adequate supply of TB drugs and treatment partners, us helpful in increasing compliance to the regimen. DOTS was not, however, followed by all FGD group participants.

From the KIs and the FGDs, the major limitations of implementing DOTS are:

(i) Lack of manpower to monitor patients, difficulty in assigning reliable treatment partners
(ii) Defaults by transient residents
(iii) Unreliable supply of medicines
(iv) Consultations, x-ray, sputum examination & getting drugs too costly and time consuming
(v) TB control not being among the priorities of local government units
(vi) Insufficient recording and reporting
(vii) Private MDs, who care for large proportion of TB patients, do not practice DOTS strategy

FGD participants gave the following suggestions to improve TB treatment:

(i) Adoption of a “one stop shop” concept of TB service delivery.
(ii) Efficient and effective identification of TB cases through sputum exam, referral of TB symptomatics, and provision of adequate TB drugs by government.
(iii) Active case finding
(iv) Protection from TB in the workplace
(v) Provision of complete TB services and drugs by company clinics.

One suggestion given by KI respondents was that private medical doctors should enlist in the DOTS program.

In order to act favorably on the suggestions cited by the FGD participants, sound public health policies will be needed to improve the supply of TB services. There is a need for improved coordination of government health programs with other non-health programs of government given the linkages between health and other developmental factors.

Discussion Based on Social Scientist Key Informants

All social scientists agreed that TB is still a problem in the Philippines largely because of the limited capacity of the public and private sectors. The inability of those sectors to respond to the needs of TB afflicted persons was explained in different ways. Each of the social scientist key informants used his or her own disciplinal perspectives in discussing the endemicity of TB.

Sociological Explanation – Due to the "stigma" attached to the disease, those afflicted tend to hide it and continue to interact socially as if they were healthy. This spread the detrimental impact to other individuals in the community.

Anthropologic Explanation – Because of the endemicity of TB in the Philippines, people become accustomed to the disease and come to perceive TB as being part of their lives since they are still surviving. The perception of TB as a disease has therefore been "normalized" and accepted as a way of life.

Ecologic Explanation – TB arises from exposure to poor working conditions, poor work practices, poor living conditions and to other people with TB.

Tuberculosis is Associated with Poverty

The poor are most affected due to lack of access to medications, and to poor living and working conditions that make them vulnerable to TB infection. Although TB can affect all people in all social classes, the vulnerability of those in the lower strata of society is due the aforementioned lack of access to medical facilities and to poor ecological conditions.

Social Origins and Medical Explanations of TB

The social origins of TB have to do with the value of health ingrained in the individual which affects his consciousness of the disease as well as his health-seeking behavior. Due to the "stigma" attached to the disease, TB may not be a compelling concern of those afflicted. The way in which health service providers interact with and treat TB patients may add to community indifference to seek treatment. Issues of confidentiality need to be addressed since they are deterrents to seeking cure.

Thus, the failure to seek medical treatment reflects not only lack of awareness but also the sick individual's valuation of health, his /her consciousness of the effects of the disease on work efficiency, and its contagiousness to others. Ignoring the early symptoms of the disease perpetuates its endemicity and thus "normalizes" it.

Medical explanations of TB, which are well-recognized, focus on factors affecting early detection and complete cure. Particularly relevant are supply side factors (e.g., availability, acceptability, accessibility, quality, and affordability of TB services). TB services provided by the public sector are widely available to most TB afflicted persons, but their accessibility is somewhat diminished by lack of confidentiality, negative attitudes towards sputum examinations, inconvenience of clinic-based treatment partners, side effects to DOTS TB drugs, and the cost and inconvenience of daily supervised drug taking. In view of this, only those who cannot afford the cost of medication would patronize the TB services of the public sector.

Private sector TB services are preferred by persons who can afford to pay for quality and convenient consultation and drugs and those who prefer to hide the disease. However, most private practitioners do not practice DOTS and thus run the risk of abetting TB drug resistance, further fueling the TB epidemic.

Employers in private companies are entitled to their prerogative of screening out applicants with TB, conscious that the disease affects the efficiency of workers and the contagiousness of the disease. However, workers already employed who fall ill of TB

due to stressful and poor working conditions and activities are entitled to TB services and drug supplies. In view of the “stigma” attached to TB, employers would rather abstain from re-hiring those who recovered from the disease, using as an excuse the effect of the disease on worker’s efficiency. Consequently, far fewer TB cases are found among workers in the formal sector.